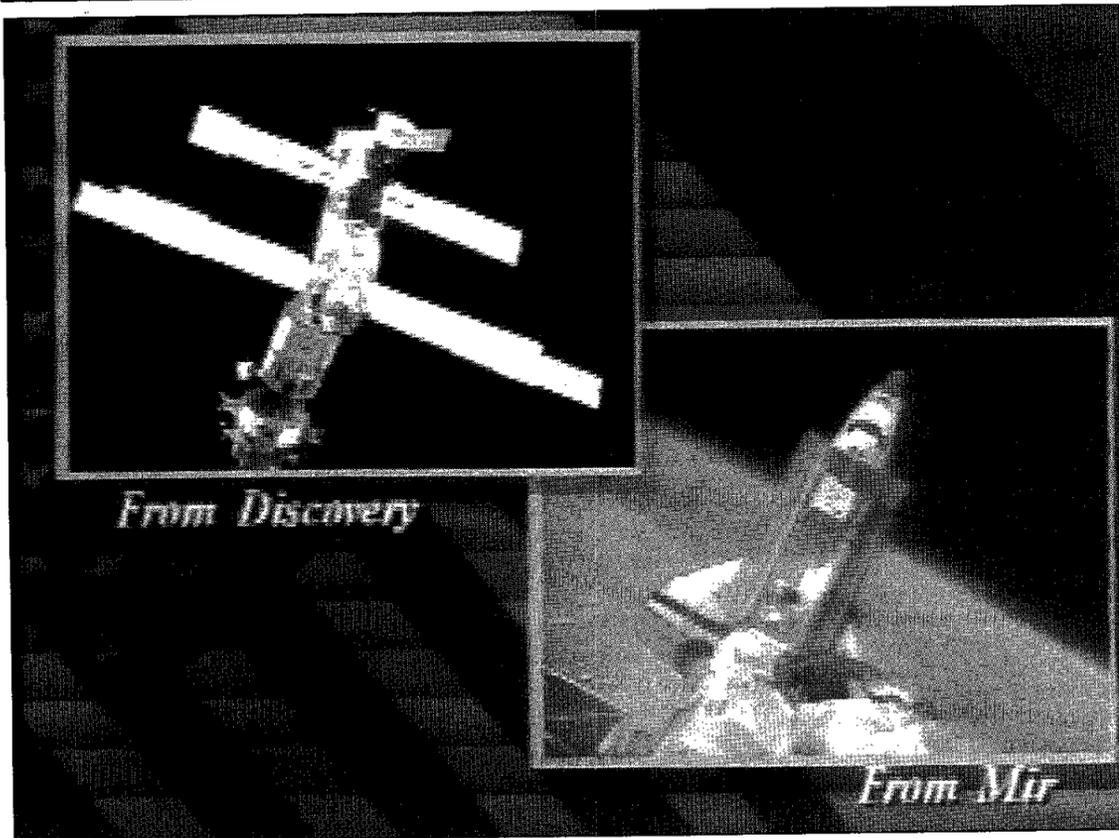


Space News Roundup

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No. 6



In a dress rehearsal for docking missions that will begin this summer, *Discovery* orbits within 37 feet of the Russian Mir space station Monday. This image, taken from NASA television, shows pictures broadcast from cameras onboard the Mir space station and *Discovery* simultaneously. Astronauts were able to wave to the cosmonauts through the orbiter's window.

Historic meeting in space sets stage for docking

By Rob Navias

Over the Pacific Ocean in the void of space, two 100-ton spacecraft orbited within 37 feet of each other Monday as the Space Shuttle *Discovery* and the Russian Space Station Mir completed a historic rendezvous.

The rendezvous and flyaround set the stage for the linkup of *Atlantis* to Mir four months from now in the first of seven planned dockings as part of the first phase of a joint cooperative program between the U.S. and Russia.

Discovery's close encounter with Mir followed several days of discussions between U.S. and Russian flight controllers who huddled to arrive at a joint agreement that a leaking jet thruster on *Discovery* would not contaminate sensitive optical sensors on the Soyuz capsule which is docked to Mir and will be used by Mir's three cosmonauts to return home from their current mission next month.

Discovery carefully edged alongside Mir to its closest point of approach at 1:20 PM CST Monday, following a three-day chase that began with a sky-lighting launch in the wee hours Feb. 3.

"We are bringing our nations closer together," Commander Jim Wetherbee radioed Commander Alexander Viktorenko aboard Mir as *Discovery* flew in formation with the Russian station for 10 minutes.

"The next time we approach, we will shake your hand and together we will lead our world into the next millennium," Wetherbee added, referring to *Atlantis's* docking mission and repeating the entire message in Russian.

"We are one, we are human, we are in the greatest profession God could give anyone," Viktorenko replied.

Discovery slowly backed away from Mir to a position 400 feet from the space station, before Wetherbee initiated a 58-minute fly-around inspection of Mir.

"This vehicle is incredible, it is absolutely beautiful," Wetherbee said as *Discovery* completed its pirouette around Mir, which has been in orbit for almost nine years.

Following the encounter, President Bill Clinton called the crew to express his congratulations and hopes for continued international cooperation in space.

"This really proves, I think, that Russians and Americans can work together and we can make this International Space Station project successful," Clinton told Wetherbee. "I appreciate all the work all of you have done to that end"

"They love their space program. We love our space program. And I think together they will be a lot better," Wetherbee responded.

Clinton congratulated Collins on Please see **DISCOVERY**, Page 4



Jason to offer Hawaiian rover viewing

By Barbara Tomaro

Employees at JSC will soon have the opportunity to piggy-back on an educational experience that includes remote exploration of isolated terrain first-hand.

Beginning Feb. 27, the Jason Project will downlink to various sites one-hour sessions of robotic exploration from the island of Hawaii.

The Jason Project was designed by a team of scientists and educators to motivate and provide professional

development for teachers, and excite and engage students in science and technology. The Jason VI Project will allow students at interactive sites around the world a chance to view and participate in the remote robotic exploration.

Students from various Primary Interactive Network sites will drive the vehicle over dried lava beds in Hawaii using remote-control software. A camera mounted on the rover allows the students from all sites can watch.

The Jason Project is coordinated by the Education and Information Services Branch in Public Affairs. In December, 300 teachers from the local area attended training to prepare them for teaching the scientific concepts illustrated by the Jason expedition. Along with students and teachers, employees at JSC may view the progress Monday-Friday, Feb. 27-March 10, at 9 and 10:30 a.m., noon, and 1:30 and 3 p.m. in the Teague Auditorium.

President's budget message forecasts reductions at NASA

President Clinton sent a budget message to Congress on Monday that includes a slight decrease for NASA in 1996, and forecasts even more reductions over the next five years.

NASA Administrator Daniel S. Goldin addressed the budget request in a briefing at Headquarters on Monday, saying that it will support a strong program, but will require "fundamental changes."

"This fiscal year 1996 budget request will allow us to deliver a strong aeronautics and space pro-

gram that's relevant to America," Goldin said. "We're doing some truly revolutionary things. And we intend to maintain our critical major activities."

The 1996 budget totals \$14.26 billion—a 1.4 percent reduction over the current year's funding level—and includes \$4.5 billion for human space flight, \$6 billion for science, aeronautics and technology, and \$2.7 billion for mission support.

"The tough news," he added, "is that we will make fundamental changes at NASA to absorb future

cuts. We'll be taking a cut of \$5 billion over the next five years. Make no mistake; when this is over, NASA will be profoundly different. We're going to restructure the agency, but the NASA that emerges is going to be better than ever."

The human space flight portion of the budget includes \$1.83 billion for development, support and operations of the International Space Station, \$129 million for the U.S./Russian cooperative program, \$3.23 billion for space shuttle operations and safety and performance up-

grades, and \$315 million for payload operations including Spacelab, a reflight of the Italian Tethered Satellite System and associated processing, engineering and advanced projects.

The science, aeronautics and technology budget includes \$1.95 billion for space science, \$827 million for planetary exploration, \$504 million for life and microgravity sciences, \$1.34 billion for Mission to Planet Earth, \$705 million for space access and technology, \$917 million for aeronautical research and tech-

nology, \$461 million for mission communication services and \$118 million for academic programs.

The mission support segment includes \$37 million for safety, reliability and quality assurance, \$319 million for space communication services, 2.2 billion for research and program management and \$166 million for facility construction.

"The budget requested by the President poses significant and unprecedented challenges for NASA and for JSC," said JSC Director Dr.

Please see **JSC**, Page 4

JSC hosts Future Quest students

Sixteen area high school students recently got a chance to see first-hand what it's like to have a career in aerospace science and engineering as JSC's Education Outreach Program continued to gain momentum.

Ten JSC employees hosted 16 students from four Fort Bend Independent School District high schools Jan. 26 as part of Future Quest and the district's School-Business Partnership Program.

JSC employees who participated in this year's visits included the Business Management Directorate's Lee Ann O'Neil; Mission Operations Directorate's Leonard Halley; Engineering Directorate's Keith Albyn, Katy Hurlbert, Jim

Park, Kelly Prendergast and Gretchen Thomas; and Space and Life Sciences Directorate's Marilyn Lindstrom, William Paloski, and Susan Taylor.

The one-day program lets seniors explore career opportunities with professionals. JSC was one of more than 60 Houston businesses that hosted 600 students this year. Students must apply to the program and provide an essay on why they wish to participate.

JSC has provided students with a "behind the scenes" look at career interest areas for several years. Usually, JSC hosts 10 students, but because of the high interest in engineering and aerospace this year, 16 students visited the center.



Students David Hertzog, left, of Elkins High School and Allison Lane, center, of Clements High School, visit with Gretchen Thomas of the EVA and Spacesuit Systems Branch in the Crew and Thermal Systems Division.

JSC Photo by Charles Clendaniel

Human Resources has buyout details

Employees have a second chance to take an incentive buyout or early retirement. The one major difference in that astronauts and Senior Executive Service employees will be eligible this time.

NASA has announced that buyouts will be available through March 31 and early-out retirements will be available through Sept. 30.

"The buyout is being offered now because of anticipated workforce reductions, and to take advantage of the existing buyout legislation that expires March 31," said Harvey Hartman, director of Human Resources. "Since the buyout authority is the same as that used in 1994, nearly all of the same provisions,

Please see **ASTRONAUTS**, Page 4

JSC Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

Musical concert: Les Miserables at 2 p.m. Mar. 26 at the Wortham Center. Tickets cost \$42. Tickets on sale through Feb. 10.

Ice hockey: Houston Aeros vs. Orlando at 8:30 p.m. Mar. 2 at the Summit. Tickets cost \$16.50. On sale through Feb. 24. Houston Aeros vs. Las Vegas at 8 p.m. Mar. 4 at the Summit. Lower level tickets cost \$11. On sale through Feb. 22. Houston Aeros vs. Milwaukee at 7 p.m. Mar. 25 at the Summit. Lower level tickets cost \$11. On sale through Mar. 15.

Clear Lake Symphony: The Clear Lake Symphony will perform at 8 p.m. Feb. 18 at University of Houston Clear Lake. Tickets cost \$5 for adults and \$3 for seniors and students. Tickets on sale through Feb. 17.

Rodeo tickets: Some performances are still available. Tickets cost \$9.50.

Moody Gardens: Discount tickets for two of three different attractions: \$9.50

Space Center Houston: Discount tickets: adult, \$8.75; child (3-11), \$7.10.

Metro tickets: Passes, books and single tickets available.

Movie discounts: General Cinema, \$4.75; AMC Theater, \$4; Loew's Theater, \$4.75.

Stamps: Book of 20, \$6.40.

JSC history: *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.

Upcoming events: Houston International Festival from April 20-30. Tickets cost \$3.

JSC Gilruth Center News

Sign up policy: All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

EAA badges: Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Feb. 23 and Mar. 14. Pre-registration is required. Cost is \$5.

Defensive driving: Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is Feb. 11. Cost is \$19.

Aerobics: High/low-impact class meets from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

Aikido: Martial arts class meets from 5-7 p.m. Tuesdays and Wednesdays. Cost is \$25 per month. New classes begin the first of each month.

Tennis league: Registration for the spring tennis league will be held Feb. 6-10. Cost is \$25. Contact the Gilruth Center at x33345.

Country dancing: Beginners class meets from 7-9 p.m.; advanced class meets from 8:30-10 p.m. Partners are required. For additional information, contact the Gilruth Center at x33345.

Ballroom dancing: Ballroom dancing classes. Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

Fitness program: Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

JSC

JSC

Dates & Data

Today

Cafeteria menu: Special: meat sauce and spaghetti. Total Health: baked potato. Entrees: rainbow trout, liver and onions, beef cannelloni, ham steak, fried cod fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, black-eyed peas.

Monday

Cafeteria menu: Special: turkey and dressing. Total Health: herb flavored steamed pollock. Entrees: breaded veal cutlet, chicken fajitas, steamed pollock, beef, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, mixed vegetables, egg plant casserole, winter blend vegetables.

Tuesday

NMA class: The Texas Gulf Coast Council of the National Management Association is hosting a 10-hour money management seminar from 6-9 p.m. Feb. 14, 21, and 28. Cost is \$50 per couple for NMA members and \$75 for non-members. For additional information call Richard Hergert at 280-0444.

Cafeteria menu: Special: pepper steak. Total Health: barbecue chicken. Entrees: baked lasagna, pork chop and fried rice, turkey a la king, baked chicken, fried cod fish, French dip sandwich. Soup: black bean and rice. Vegetables: breaded squash, steamed spinach, baby carrots, navy beans.

Wednesday

Blood drive: Rockwell will host its annual blood drive from 8-11:30 a.m. and 1-2:30 p.m. Feb. 15 at the Rockwell civic room. For additional information call Margy Pelonero at 282-3418.

AIAA seminar: The American Institute of Aeronautics and Astronautics will host a two part seminar on the Internet at 6:45 p.m. Feb. 15 at the LPI Lecture hall. For additional information call Naz Bedrossian at 333-2127.

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Feb. 15 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

Toastmasters meet: The Space-land Toastmasters meets at 7 a.m. Feb. 15 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Darrell Boyd, x36803.

Bike ride: The JSC Bicycle Club will meet for a 1.1- and a 1.6-mile loop at 5:30 p.m. Feb. 15 behind the Grumman bldg. at Ellington Field. For additional information call Juliette Wolfer at x38459.

Cafeteria menu: Special: Mexican dinner. Total Health: steamed pollock. Entrees: broccoli cheese quiche, spare ribs and sauerkraut, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: Spanish rice, pinto beans, peas, broccoli.

Thursday

AIAA meet: The American Institute of Aeronautics and Astronautics will host a dinner beginning at 5:30 p.m. Feb. 16 at the Gilruth Center. Gene Kranz is the featured speaker. For additional information call Fran Jamison at 333-6277 to Tanya Bryant at x31175.

Cafeteria menu: Special: hamburger steak with onion gravy. Total Health: baked potato. Entrees: corned beef, cabbage and new potatoes, chicken and dumplings, meat ravioli, French dip sandwich. Soup: broccoli cheese and rice. Vege-

tables: navy beans, cabbage, cauliflower, green beans.

Friday

Cafeteria menu: Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks.

Feb. 21

Speech contest: The Loral Chapter of the National Management Association will host the opening round of the American Enterprise Speech contest for high school students beginning at 5:30 p.m. Feb. 21 at South Shore Harbour Country Club. For additional information call Mary Jane Powell at 282-7781.

Feb. 22

Logistics symposium: The American Institute of Aeronautics and Astronautics and the Society of Logistics Engineers will host the sixth Space Logistics symposium from Feb. 22-24 at the South Shore Harbour Resort. For additional information call Steve Zobel at 244-4231.

Feb. 23

Blood drive: Lockheed will host its annual blood drive from 8-11:30 a.m. Feb. 23 at the Lockheed Plaza One bldg. For more information call Joe Victor at x34891.

Feb. 27

Quality conference: The Third Annual Conference on Quality in the Space Industry will be held from 8-6 p.m. Feb. 27 at South Shore Harbour Resort. For registration and information call Glen VanZandt at x33069.

Swap Shop

Property

Sale/Rent: Egret Bay waterfront condo, 1-1, FPL, fans, W/D, D/W, micro, cov park, dock, pool, \$530 + dep. Karl, x33031 or 334-1164.

Rent: LC Countryside, 3-2-2, fenced yard, \$825/mo. 338-2332.

Rent: Wintler Park, Co, condo, 2-2, fully furnished, sleeps 6, 488-4453.

Rent: Galv condo, furn, sleeps 6, Seawall Blvd & 61st St, wknd/wkly/dly, \$199/Mardi-Gras wknd. Magdi Yassa, 333-4760 or 486-0788.

Sale: Rosewood Memorial Cemetery, 4 lots, \$395/ea. 244-0250 or 941-3262.

Rent: Lake Travis cabin, priv boat dock, A/C, furn, sleeps 8, wkly/dly \$325/\$90, 474-4922.

Sale: Baywind II condo, 1-1, new carpet/ paint, W/D, fridge, D/W, FPL, \$23k. 486-8047.

Sale: Mobile home, '85 Remington, 3-2, lg kitchen, D/W, gas stove, W/D hookups, in San Leon, move nego, \$13.3k. 554-2156.

Rent: El Dorado Trace, 2-2, furn, W/D, TV/VCR, FPL, alarm, micro, \$675/mo + electric. 333-8126 or 488-1327.

Sale: LC, 2-2-2, deck, new appl, new paint inside & out, ceiling fans, \$59.5k. 554-2619.

Sale: LC, 3-2-2, Bayridge, A/C, ceiling fans, lg yard, ul-de-sac, \$55k/obo. 286-1934.

Sale: 2.69 acres, Friendswood, 150' front, cleared, easy to build, all city util, \$49.5k. Howard, x37346.

Rent: Breckinridge, CO, house, 4-3-loft, sleeps 12. 103-482-9124.

Sale/Trade/Lease: House, 3-2-2A, near 290 & 1960, new roof/heatpump, new paint/carpet, \$65k. x31265 or 86-3161.

Cars & Trucks

'90 Pontiac Firebird, black, ex cond, runs great, \$6,250 nego. Patrick, 488-3198.

'86 Nissan Sentra, 5 spd, A/C, 2 dr, light blue, 95k mi, 1.8k/obo. Ian, x34853.

'87 Chevy Nova, auto, new tire/timing belt/ batt & more, ex cond, \$2,650. Ian, x34853.

'82 Volvo 242 series DL, 4 dr, beige, good tires, auto, S/PB, A/C, garaged, 92k mi, \$2.3k. Doug, x48851 or 86-7412.

'86 Chevette, auto, good A/C, clean, 78k mi, \$1.3k. Ian, x38833 or 333-0406.

'93 Ford Explorer XLT, forest green, ex cond, 17.4k/obo. 409-925-1258.

'88 Ford Mustang LX, w/4 cyc, needs paint job but ex cond, \$2.5k. 487-9677.

'82 Ford Crown Victoria, 302, new carb/rear nd/water pump, ex cond, \$2k. 487-9677.

'81 Oldsmobile Cutlass Supreme, V-8, 2 dr, 88k mi, ood cond, \$1.1k. Greg, x48647 or 474-3668.

'87 Nissan Maxima, auto, fully loaded, sunroof, metallic grey, 97k mi, ex cond, \$4.5k. 996-1965.

'72 Toyota Corona Mark II, 4 dr, auto, horn/ inspect soded, runs good, \$900 firm. 471-4843.

'93 Mazda MX-6, hunter green w/beige inter, V-6, 5 jd, alarm sys, pwr sunroof, 24k mi, ex cond, \$16.1k. 36-2414.

'93 Suzuki Sidekick, 5 spd, stereo, A/C, 26k mi, red /white convert top, \$8.5k/obo. Johnny, 338-7788 ext 7.

'83 Toyota Cressida, brown, leather, pwr sunroof, C, runs great, \$1.5k. Steve, 244-9625 or 486-8047.

'93 Taurus GL, lt blue, ex cond, 32k mi, warr to '96. 36k mi, \$10.2k. 488-1493.

'87 Honda Accord LX, 4 dr, auto, A/C, stereo, cruise, 17.5k. 488-7771.

'64 T-Bird, current tags/inspection, \$2.2k. 334-1629.

'89 Ford Escort, 4 dr, auto, A/C, blue met, 80k mi, AM/FM, new brakes, ex cond, \$2,995. x39135 or 480-3853.

'86 Cutlass Supreme, 2 dr, white, 66k mi, AM/FM, ex cond, new tires/exhaust, alt/battery, \$3.2k. Frank, 282-3858.

'87 Mazda 626 LX, auto, 4 dr, grey, power door locks/windows/sunroof, A/C, cass/equal, 1 owner, 76k mi, \$4k. 488-8588.

'93 model 27' Aljo Deluxe fifthwheel camp trailer w/hitch, ex cond, very clean, stored inside, \$13k. x33437 or 332-2705.

'84 Dodge Shelby Charger, silver & blue, new paint/carb & computer, ex cond, \$2.5k/ obo. Jeff, x47443 or 486-5763.

'88 GMC custom Starcraft van, loaded, 69k mi, ex cond, \$9k. x38450 or 481-6928.

'92 Mazda Miata MX-5, red/black, B-pkg, 24k mi, 6 yr/100k mi warranty, ex cond, \$16k/obo. James, x31064 or 334-1766.

'82 Chevy Chevette, runs great, good work car, \$600/obo. 485-4008.

'91 Toyota PU, 5 spd, A/C, red w/grey interior, AM/FM/cass, bedliner, custom wheels. 271-7011.

'87 Kawasaki Ninja 750 cc, 20k mi, 2-Shoei helmets, \$2k/obo. James Sparks, 480-8101.

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IBM Data 1000 w/color card for color monitor & b/w 14" monitor, \$100. x37520.

Photography

VHS-C Zenith Camcorder w/batt, charger/AC adapter, RF switcher, camera bag, ex cond, \$225/obo. Pete, x31694 or 481-8561.

Canon SLR EOS Rebel X, w/35-105 mm lens, 2x tele converter, UV filter, case, strap & users guide, \$275. Dennis, x31409 or 488-0182.

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Letters Home

An update on Thagard and Dunbar in Star City



Editor's note: As astronauts aboard Discovery and cosmonauts aboard the Mir space station came close enough to wave at each other, training continued in Russia's Star City for the first American astronaut who will spend three months aboard the space station. The following is a letter home from those cosmonauts in training.

By Eileen Hawley

On March 14, two veteran shuttle astronauts will begin historic journeys.

On that day, Norm Thagard will blast off from the Baikonur launch complex in Kazakhstan to spend three months on the Mir space station, while Bonnie Dunbar prepares to return home to Houston to train for the shuttle mission that will return Thagard and his Russian crewmates to Earth.

The two astronauts have spent the past year training in Star City, the facility that has trained Russia's cosmonauts for more than 30 years. Thagard and his Mir 18 crewmates—Commander Vladimir Dezhurov and Flight Engineer Gennadiy Strekalov—are the prime crew for the flight, backed up by Dunbar and her Mir 19 counterparts—Commander Anatoly Solovyev and Nikolai Budarin.

With the exception of a brief visit to JSC for baseline data collection and preliminary training on U.S.-provided hardware, all of the training has taken place in Russia.

Initially that training focused on classroom lectures to acquaint the two shuttle veterans with Russian systems—and tests, conducted in Russian—to confirm the lessons were learned.

"I've been very focused," Thagard said.

"About all I've done is study, just trying to make sure I learned the systems and could pass tests in Russian without any translation or other help."

While Thagard focused on mastering Mir and Soyuz systems, his wife Kirby and youngest son Daniel began exploring Star City. Kirby now teaches English 2 1/2 days a week at the local high school where Daniel is in tenth grade. To meet Texas state requirements, Daniel also is being home schooled, and receiving tutoring in math at the American Embassy in Moscow.

For the past four months, Dunbar has shared her experiences in Star City with husband Ron Sega, an astronaut serving a tour of duty as NASA manager of operational activities at the training facility.

With their families living and working alongside them, Thagard and Dunbar delved full time into hands-on training with their separate crews.

"We have been spending most of our time now in the simulators with our own crews—Norm with Mir 18 and me with Mir 19," Dunbar said. "We've had sessions in the Mir trainer, and worked quite a bit in Soyuz. We've practiced multiple launches and approaches, and dockings to the Mir. I'm excited to have completed their training program and to have learned as much as I have."

With launch approaching rapidly, the pace of crew training activity is winding down, and Thagard anticipates a less hectic schedule in the weeks before beginning his historic journey to Mir. However, as he prepares for launch, Thagard is finding some differences between the two programs in the final days before flight.

Instead of enjoying the traditional beach house visit the day before launch, Thagard,

his crewmates and their families will be able to spend a few days alone at a dacha—or country house—before the launch.

Then, the Mir 18 crew along with their backup Mir 19 counterparts, will head to Baikonur to ready themselves for launch.

"It's tradition that the backup crew accompanies the prime crew for launch," Dunbar said. "We will be with them when they get suited, but it's also tradition that we do not go to the launch pad with them."

Another difference in store for Thagard is his responsibility for communications systems on board Soyuz during ascent.

Sitting in the right hand seat, Thagard is responsible for throwing communications switches and operating television on board the Soyuz capsule. The commander will occupy the left seat, and the flight engineer in the center seat will perform the functions typically carried out by the pilots on a shuttle flight.

The uniqueness of the journey on which he is about to embark is not lost on Thagard.

"One of things I found most appealing was the possibility of doing something that no American had done before," Thagard said, "and I still think that is the neatest aspect of it."

Thagard notes that although the flight is unique from his perspective, his Russian counterparts have been flying with international astronauts for several years.

"I don't know that they sense any difference between this flight and any other flight with a foreign guest cosmonaut," Thagard said. "There may be a small difference since I am an American, but I don't think it has the same significance it might have had 5-10 years ago."

Dunbar reflected on the same thought, recalling the historic Apollo-Soyuz Test Program of 20 years ago.

"The Russians remember Apollo-Soyuz," Dunbar said. "They have commemorated it in stamps, and it is a program that has stayed alive here. It was an important foundation and I think this is the next step in it. I think ultimately the human spirit as it is embodied in this generation and the next, would like to go beyond space station in the next century, and that's probably something that only can be accomplished on a large, international scale."

That spirit of international cooperation will continue to grow during Thagard's stay on board Mir. Dunbar will return to Houston in March, followed soon after by Solovyev and Budarin, her Mir 19 crewmates where they will begin training for a June launch on board *Atlantis*.

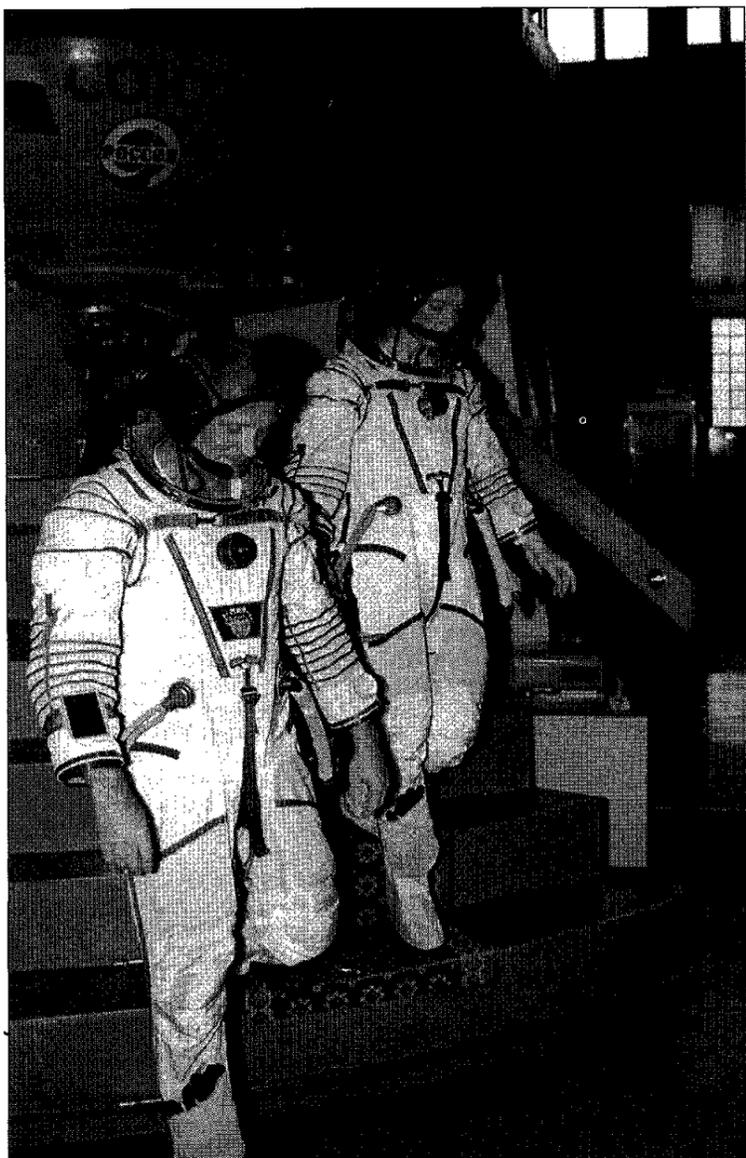
"Nikolai will be making his first spaceflight on STS-71," Dunbar said. "I asked him the other day if it wasn't hard for him intellectually to spend six years training for spaceflight and then not even to launch in his own country."

"He laughed and said 'no, it's going to be a prahznee and in Russian, that's a holiday, so he's looking forward to it."

Dunbar also is looking forward to the flight, the first in a series of seven planned docking missions between the shuttle and Mir. *Atlantis* will remain docked with Mir for four days, transferring biomedical samples collected during Thagard's historic stay, and transferring crew members between the two spacecraft.

Solovyev and Budarin will leave *Atlantis* to begin a stay on Mir while Thagard, Dezhurov and Strekalov return to Earth on board the shuttle.

Although both Dunbar and Thagard are looking forward to their adventures in space, they also look forward to returning home to friends, families and coworkers in Houston. □



NASA Photos

STAR TRAINING—Top: Astronauts Norm Thagard and Bonnie Dunbar in cosmonaut space suits train for the life science experiments to be performed during a three month stay aboard the Mir space station. Bottom left: Both astronauts complete a training session in the Soyuz TM mock-up at the Gagarin Cosmonaut Training Center. Bottom right: The Mir space station simulator gives the astronauts an opportunity to develop in-depth knowledge of what to expect during the three-month stay in orbit.

Baldrige examiners commend NASA commitment to excellence

Editor's note: This article is part of a series from NASA Headquarters in an effort to make the agency more efficient. Chris Williams is a program analyst for the Office of Continual Improvement at NASA Headquarters.

By Chris Williams

The vice president's National Performance Review has promised the American people a reinvented government that cuts unnecessary spending, better serves its customers, empowers employees, helps communities solve their own problems and fosters excellence throughout. The process of reinvention begins by adopting a model of excellence that works and measuring the organization against that

model to establish a baseline for action.

The Malcolm Baldrige National Quality Award criteria is used by industry as the standard of excellence. The federal government is now adopting the criteria as a model for all federal agencies.

In 1994, 12 volunteer examiners reviewed NASA to provide a baseline report.

The examiners identified a number of strengths which demonstrate that "NASA has taken significant actions to define and institute an agencywide (corporate) quality improvement initiative to shape the future direction of the agency."

The strengths include, the active involvement of NASA's executive

leadership in guiding the quality transformation; strong commitment to organizational excellence throughout the agency; wide recognition of the need for change; and close working relationships between customers and suppliers at the field center level projects.

In identifying opportunities for improvement, the examiners focused on NASA's need to integrate a number of planning initiatives, including the NASA Strategic Plan, Continual Improvement Plan, Strategic Management Plan, Customer Service Plan, Government Performance and Results Act Implementation Plan and the Streamlining Plan.

The examiners identified six areas of improvement. NASA must develop

a systematic deployment of communication and communicate NASA's vision, values, strategic goals, objectives, and quality emphasis to all members of the NASA community. NASA needs to develop an agencywide strategy for using competitive comparison and benchmark information to drive improvements.

The examiners also found that the agency needs to collect and aggregate customer data in order to meet, exceed and anticipate customers' immediate and long-term needs.

A Human Resources plan is needed and it must be linked to an integrated NASA Strategic/Continual Improvement plan. Managers must systematically identify, prioritize, measure and improve key NASA pro-

cesses, and develop a relationship between outputs and outcomes in key result areas and the goals, objectives and strategies contained in a unified corporate Continual Improvement plan.

NASA's composite agencywide score was 239 on a scale of 0-1000 (centers were not rated separately).

That sounds low, but the examiners said a score at this level is typical for organizations in the early stages of reinvention.

The examiners also stressed that they saw a number of areas at NASA where progress has been made toward achieving quality management, although the agency must now integrate these efforts toward a common vision.

U.S.-Russian ozone-mapping mission is over

More than three years after it began, the mission of NASA's Total Ozone Mapping Spectrometer aboard the Russian Meteor-3 spacecraft appears to be over.

Launched from Plesetsk in the then-Soviet Union on Aug. 15, 1991, the TOMS instrument has already exceeded its design life of two years, providing important data and global maps of total ozone levels. TOMS data is used primarily to determine long-term ozone trends, detect sulfur dioxide clouds from volcanic eruptions and detect atmospheric aerosols and dust storms.

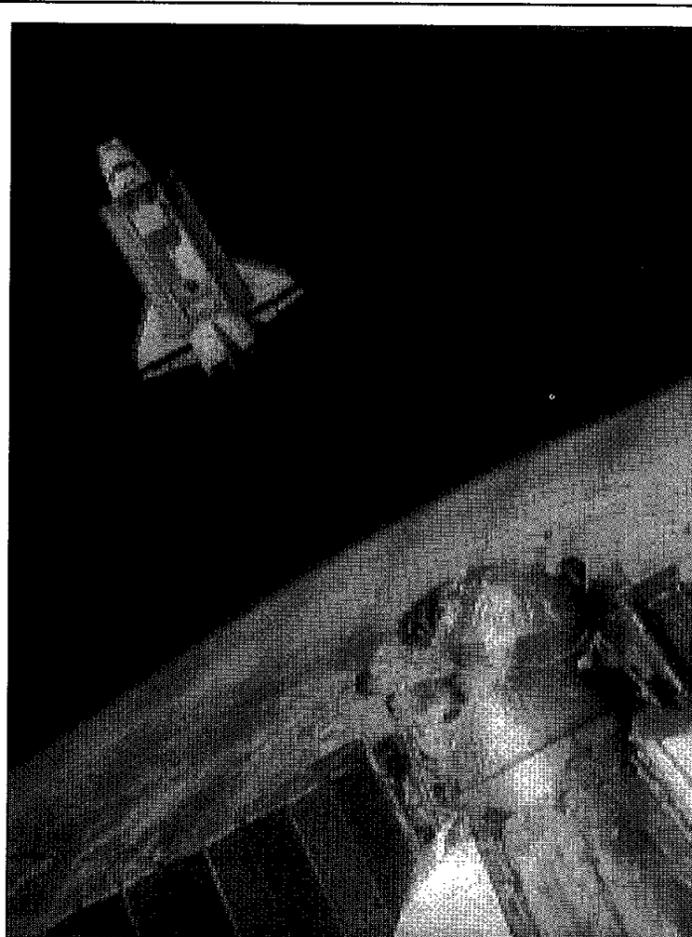
Recent attempts to revive the instrument, which failed in December, have been unsuccessful. Though monitoring of the device will continue through April, the instrument team has said it is unlikely that further efforts will succeed.

"Even though it appears we will lose the instrument, I am quite pleased with TOMS and the Russian spacecraft's performance during the past 3 years," said Dr. Jay Herman, TOMS/Meteor-3 principal investigator, of NASA's Goddard Space Flight Center. "The instrument has produced a large quantity of critical atmospheric data longer than its designed 2-year lifetime."

The TOMS/Meteor-3 instrument is NASA's second. The first, which operated from 1978 through 1993, provided part of the scientific underpinning for international treaties banning the manufacture and use of ozone-depleting chemicals.

"We appreciate our Russian colleagues' efforts to help us try an innovative approach to spacecraft operations," Herman said. "This kind of cooperative spirit has marked all phases of the mission, from planning and operations to data analysis. The result has been a very smooth mission."

NASA plans to fly two more TOMS within 13 months. The first is scheduled aboard a Pegasus launch vehicle in May, the second aboard the Japanese Advanced Earth Observing Satellite in February 1996. The fifth TOMS instrument will fly aboard a Russian Meteor-3M satellite in 2000.



NASA electronic image

During the dress rehearsal for future dockings, the Russian Mir space station's television camera captures *Discovery* as it hovers near Earth's limb. The Mir and the orbiter were within 37 feet of each other during Monday's rendezvous.

Discovery to land Saturday

(Continued from Page 1)

being the first woman to serve as a shuttle pilot, Harris for becoming the first African-American to walk in space and Titov for being the first Russian to see Mir from an American shuttle.

"I think that people all over our country and all over the world will be seeing you today and will say, 'This is something worth doing,' Clinton concluded.

After a one-day delay caused by the need to replace one of three on-board navigation units, *Discovery* blasted off on time at the start of its brief five-minute launch window at 12:22 AM EST Feb. 3. Within hours, *Discovery's* astronauts had activated the nearly two dozen experiments in the SPACEHAB commercial science module housed in the shuttle's cargo bay, and tested the ship's robot arm for various tasks during the mission. The following day, Janice Voss and Vladimir Titov used the mechanical arm to lift the SPARTAN astronomy satellite out of its berthing platform for several hours of observations of the glow phenomenon which occurs as a shuttle plows through atomic oxygen in low Earth orbit. SPARTAN was then reberthed until Tuesday, when it was lifted back out of its platform and deployed for 48 hours of independent studies of distant stellar objects.

Astronauts Bernard Harris and Michael Foale prepared for a five-hour excursion outside *Discovery* on Thursday by taking time out Wednesday to check

their space suits and associated tools which they expected to use to practice the handling of massive objects in weightlessness. In this case, Harris and Foale planned to lift the 3,000-pound SPARTAN out of its platform in the cargo bay so it could be passed back and forth, demonstrating the ability to manipulate large items in the absence of gravity.

Among the SPACEHAB experiments conducted in the commercial module was a robotic demonstration named CHARLOTTE, a device resembling a microwave oven that moved around the module on spider-web cables. CHARLOTTE monitored the various experiments in SPACEHAB through a television camera and used mechanical "arms" to turn dials and flip switches.

Discovery and its six astronauts were scheduled to make a predawn landing at the Kennedy Space Center at 5:49 AM EST Saturday to wrap up their pathfinding flight.

While *Discovery* orbited the Earth, *Endeavour* was rolled over from the Orbital Processing Facility at KSC to the Vehicle Assembly Building, where it was mated to its fuel tank and solid rocket boosters. *Endeavour* was scheduled to be hauled to Launch Pad 39-A this week for final preparations for the STS-67/ASTRO-2 mission in early March. The Flight Readiness Review by NASA managers to set a firm launch date for *Endeavour* is planned on Feb. 15.

New software helps users buy computer equipment

JSC's Information Systems Directorate is distributing a new expert system designed to save time and effort in the procurement of computer equipment and software.

The system, called the Acquisition Planning Expert, helps users prepare NASA Form 1647, the Federal Information Processing Resource Decision Document and related documentation.

APEX has been used at JSC for the last two years and metrics kept on the FRDD process show a significant savings in time to prepare and review FRDD's when using APEX.

Key features of APEX 2.3 include a full graphical user interface, checking of data input, on-line help

and examples, a built-in calculation allowing determination of the lowest cost alternative, a subsystem to determine applicable standards and tracking of additional required information. APEX runs on personal computers with Microsoft Windows 3.1 or on Apple Macintosh SE or better. The output is a completed NASA Form 1647.

The use of APEX at JSC to prepare NASA Form 1647 became mandatory Feb. 1. No other versions of this form will be accepted for review and approval. To obtain a copy of APEX or for assistance in using the program, contact the Information Systems Directorate Help Desk at x34800.

Craig gets high post at Stennis

Long-time JSC employee Mark Craig has been named deputy director of Stennis Space Center.

Craig was manager of the Space Station Technical Project at JSC.

"We are very pleased to have an individual of Mark Craig's caliber join

us at Stennis," said Roy Estess, director of Stennis. "I have known Mark a number of years and have worked closely with him on a number of major efforts. I can assure you he'll be a great addition to the Stennis team."

Astronauts qualify for buyout

(Continued from Page 1)

including the 5-year limit on reemployment, will apply."

The buyout is a lump-sum incentive payment available to employees who voluntarily retire or resign by March 31. The payment is equivalent to the amount of calculated severance pay up to a maximum of \$25,000. A worksheet for computation of buyout incentive is included on the announcement.

Early-out is a short-term special retirement authority in effect through Sept. 30, that will permit qualified employees to voluntarily retire earlier than normal. Under early-out, Civil Service Retirement System retirees will have a 2 percent reduction in annuity for each

year under age 55. Generally speaking, there is little reduction for age for Federal Employee Retirement System early-out retirees. The requirements for early-out are: 25 years of service or age 50 with 20 years of service.

Most permanent employees who have been with NASA for at least one year and who voluntarily retire or resign between March 15 and 31, are eligible to receive the buyout incentive. Reemployed annuitants or employees who separate under disability retirement or discontinued service retirement are not eligible.

More information and assistance is available through Employee Services, located in Bldg. 45, Rm. 140, or call at x32681.

JSC faces new challenges

(Continued from Page 1)

Carolyn L. Huntoon. "We are facing a period of profound change and restructuring that will alter the face of the American space program forever. We must be willing to rethink our approach to everything we do at JSC, and we must continue to work to find new and innovative ways to do more with less. We will do everything possible to limit the hardships on our people.

"Our most immediate concern is and will always be maintaining safety—in space and on the ground. Within the boundaries of safety, we must find new ways to carry out a streamlined, focused and efficient human space flight program at considerably less cost. But just as we have met the challenges of today's historic mission in space, I am confident that the JSC team is up to the job," Huntoon said.

Goldin said NASA has been in the forefront of the Clinton Administration's efforts to reinvent government. The agency already has cut its budget by 30 percent, reducing support contracts, downsizing the feder-

al work force and eliminating low-priority programs.

But the anticipated cuts over the next five years will force NASA to rethink the entire structure of the agency, its relationship with contractors, its facilities and its work force.

"The way we do business here will have to change—and change dramatically," he said. "This will be painful. It means NASA employees will lose their jobs. Contractors working at NASA, and at their own offices will lose their jobs. I wish we could reinvent NASA without any disruption to any employees. I wish it were easy. But it isn't."

A number of reviews, some already completed and some still under way, are expected to identify areas for streamlining and improvement in the way NASA conducts its programs, Goldin said.

Long-term impacts on JSC manpower and institutional funding are not completely clear at this point and are likely to be influenced by the results of these reviews and agency restructuring efforts, according to JSC Comptroller Wayne Draper.

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